

NYMPHOIDES TRIANGULARIS AND N. ELLIPTICA (MENYANTHACEAE): TWO NEW AUSTRALIAN SPECIES

by

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ABSTRACT

Two new species of *Nymphoides* Séguier, *N. triangularis* and *N. elliptica*, are described and illustrated and notes on distribution, habitat and diagnostic features are provided. Both species are from Cape York Peninsula, Queensland, Australia.

TAXONOMY

This paper is the second precursor to a revision of *Nymphoides* Séguier in Australia. The previous paper, describing five new species, appeared in *Muelleria* 5(1):35-51 (1982). With two slight modifications concerning style type and corolla tube length, the common characters given on page 35 of that paper also apply to *N. triangularis* and *N. elliptica*. Both species belong in the "indica group" defined on the same page.

Nymphoides triangularis H. I. Aston, sp. nov.

Nymphoides sp. nov. "E", Aston in litt.

Plantae annuae. Laminae foliorum (13-) 30-65 x (12-) 17-50 mm, ovatae usque anguste vel late triangulares, singulae sinu basali profundo acuto; lobi et apex obtusi. Inflorescentia fasciculum densum pedicellorum formans, a folio singulari subtenta; petiolus folii subtendentis plerumque laminam aequans vel longior. Flores heterostyli, (4)5(6)-partiti. Corolla 14-26 mm diametro, alba vel pallide rosea vel pallide malvino-rosea, fauce flavo; lobi duabus alis latis lateralibus profunde laciniatis praediti (alis ab apice paene usque basin extendentibus) et proxime super basin fimbriis conspicuis transversis papillarum tenuium ornati; tubus fasciculo pilorum subtilium pluriramantium instructus (pili 1-2.5 mm longi, secundum lineam mediam quisque inter bases filamentorum). Stylus florum longistylum c. (3.1-) 4.3-5.8 mm longus. Stigma florum longistylum \pm ellipticum. Capsula anguste usque late ellipsoidea. Semina 23-63 per capsulam, paene globosa sed parce usque moderatim lateraliter compressa, 0.45-0.70 x 0.45-0.65 x 0.25-0.55 mm, maturitate atrofusca, tuberculis obtusis brevissimis velata (vel tubercula juxta margines seminis solum occurrentes); caruncula basalis, rotunda, pallida, crassa, conspicua.

Ob petiolum longum folii peculiaris (quod inflorescentiam subtendit) et ob pilos longos subtiles ramificatos *N. ellipticae* similis, sed ab illi specie differt: seminum numero sculpturaque, loborum corollae figura, styli longitudine et stigmatum forma in floribus longistylis, atque laminae typicae foliorum forma.

Apparently annual. *Petiole-like stems* few to many, arising from the plant base, slender, flexuose, 3 cm (plants on mud) to 40 cm (plants in water) long x 1 mm or less diam.; true petiole conspicuous, (0.5-) 1.75-7 cm long, usually as long as or longer than the blade, equal in width to the stem and like it often deep maroon-purple. *Leaf blade* obtuse, entire, \pm ovate to narrow- or broad-triangular in outline, with a pronounced, usually acute, basal sinus; sinus (20-) 30-45 (-50)% of total blade length, of (20°-) 35°-75° (-90°) angle; basal lobes obtuse; blade (13-) 30-65 x (12-) 17-50 mm, usually widest across the basal lobes close to their extremities, sometimes widest close to the petiole insertion, green above, sometimes purplish beneath, not spongy. *Inflorescence* as for the "indica group", the pedicels subtended by acute bracts 1-4 mm long and clustered on a rachis which is at first not pronounced but which may develop into a conspicuous projection 5-10 mm long x 2-2.5 mm wide with the older fruited pedicels fallen from its proximal portion. *Pedicels* (5-) 15-25 simultaneously present, noticeably distanced from the subtending leaf blade by the conspicuous petiole, very slender, (10-) 35-75 x <0.5 (-0.75) mm, usually pale to deep maroon-purple. *Flowers* (4)5(6)-partite. *Calyx lobes* lanceolate to narrow-ovate, acute, greenish or purplish with narrow translucent margins,

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Muelleria 5(4): 265-270 (1984).

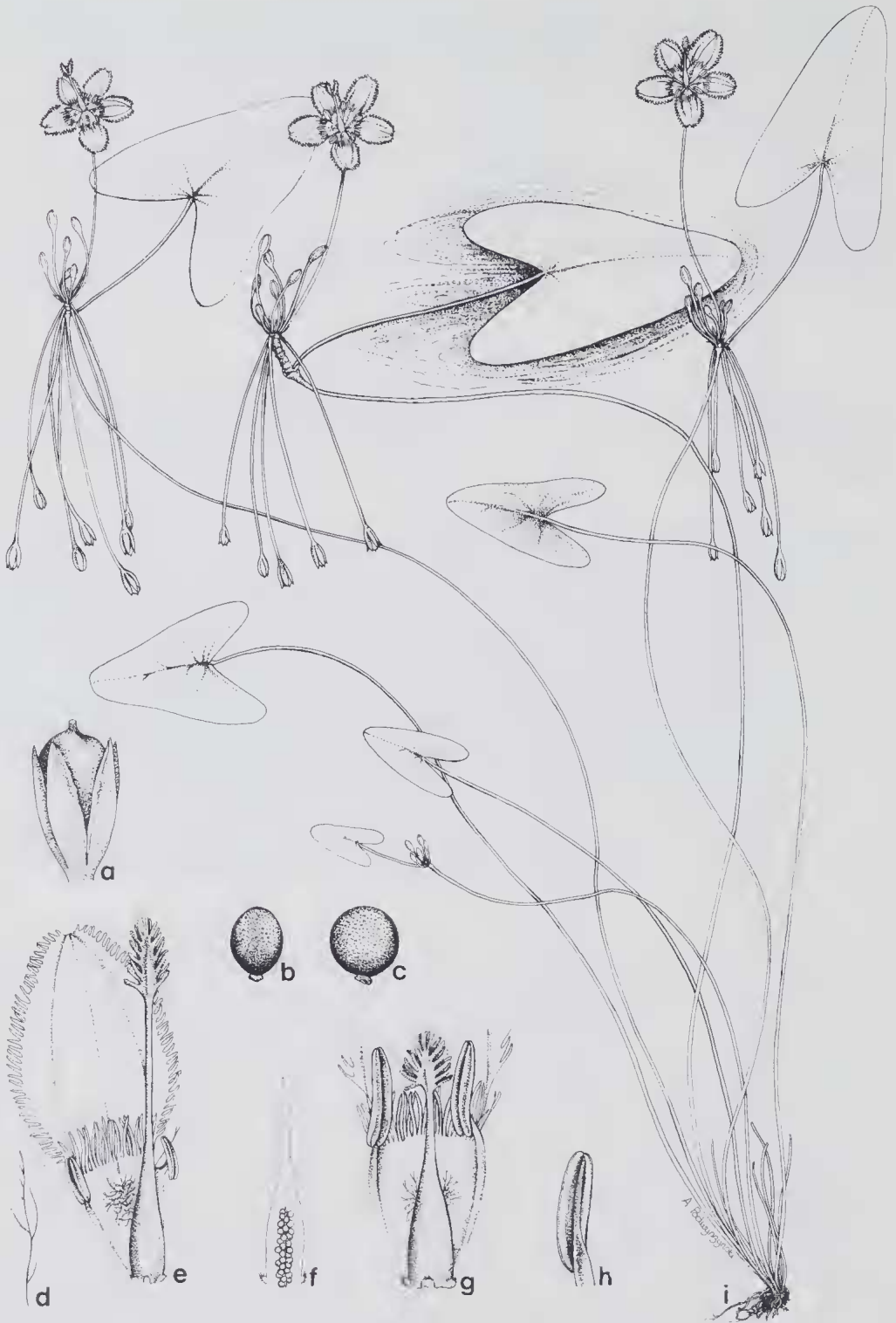


Fig 1. *Nymphoides triangularis*. a — capsule and persistent calyx, x 4. b — seed, edge view, x 13. c — seed, face view, x 13. d — hair from the corolla tube clusters, x 16. e — portion of long-styled flower, x 5.5. f — ovary, L.S. showing the position of one of the placentas, x 5.5. g — portion of mid-styled flower, x 5.5. h — anther, dorso-lateral view showing connective and versatile attachment, x 13. i — habit, x 0.7. All from Aston 2262(MEL).

often outcurved at the apex in fruit, (3-) 4.5-6.5 mm long. *Corolla* 14-26 mm span, c. 3 times as long as the calyx, white or white tinged with very pale pink or mauve-pink, the tinge deeper on the external surface of the mid-section of the lobes; tube yellow. *Corolla lobe* broad-elliptic to rotund; mid-section glabrous except for a conspicuous transverse fringe of fine papillae 1.2-2.5 mm long just above its base; side-wings broad, undulate, deeply lacinate, extending from the apex almost to the lobe base. *Corolla tube* equal to or a little > calyx; tube "papillae" consisting of a conspicuous cluster of long, fine, sessile, several-branched hairs 1-2.5 mm long. *Stamens* with filaments c. 0.5-0.7 and 1.2-1.7 mm long in long-styled and mid-styled flowers respectively; anthers broad-linear, 3-4 times as long as broad, 1-1.9 mm long. *Gynoecium (long-styled flower)* c. 6-10 mm long; ovary very narrow-ellipsoid, gradually tapered into the style; placentas 2, about one-half to two-thirds of the ovary length, positioned centrally or from centre to base down the ovary wall; ovules c. 23-72; style c. (3.1-) 4.3-5.8 mm long, very slender; stigmas 2, each an erect, \pm elliptic to broad-elliptic, papillate, strongly lacinate wing c. 2 mm long. *Gynoecium (mid-styled flower)* c. 4-7 mm long; style c. 1.2-2.3 (-3.5) mm long; stigmas 0.9-1.5 mm long, broad-elliptic to rounded. *Capsule* narrow- to broad-ellipsoid, from a little < to equal to (occasionally slightly >) the calyx, (3.0-) 3.5-5 mm long. *Seeds* 23-63 per capsule; body of seed near-globose but slightly to moderately laterally compressed, 0.45-0.70 mm long x 0.45-0.65 mm wide x 0.25-0.55 mm thick, dark grey-brown-black when mature, moderately densely covered with very short obtuse tubercles or else having the faces smooth with the tubercles present only on and close to the seed edges and gradually diminishing in length from the edge towards the face; basal caruncle circular, pale, \pm thick and conspicuous.

TYPE COLLECTION:

14.8 km east of "Musgrave" along the "Marina Plains" road, 14° 44' S., 143° 37' E., Cape York Peninsula, Queensland, 13.v.1982, *Aston* 2262 (Holotype: MEL 612194. Isotypes: BRI, CANB, MEL 612195 and 196).

SELECTED SPECIMENS EXAMINED (total 7):

Queensland (Cape York Peninsula) — Codroy Creek, 5.3 km NW of the Hann River crossing of the Laura to Coen road, 15° 10' S., 143° 50' E., 11.v.1982, *Aston* 2246 (BRI, CANB, DNA, K, MEL 612182-186, NSW). 3.2 km E of "Musgrave" along the "Marina Plains" road, 14° 46' S., 143° 31' E., 13.v.1982, *Aston* 2256 (BRI, MEL 612187-189). 4.5 km E of the Aurukun-Beagle North Camp road and 6.8 km S of Cowplace Creek, 13° 15' S., 141° 53' E., 1.vi.1982, *Clarkson* 4459 (BRI (not seen), MEL 609390). 10 km E of the Edward River Settlement, 14° 50'-55' S., 141° 40'-45' E., 5.iv.1981, *Garnett s.n.* (MEL 1521027).

DISTRIBUTION:

Queensland — Known only from the Aurukun, Edward River, "Musgrave" and Hann River areas of Cape York Peninsula. Almost certainly occurs elsewhere on the peninsula in similar habitat.

HABITAT:

Clear, still to gently flowing fresh water 5-25 cm deep on sandy substrate in seasonally flooded swamps and small ephemeral streams through *Melaleuca* woodland. Temporarily persists as small, more or less erect, depauperate plants on drying mud left by receding waters. Fl. and Fr. recorded 5 April-22 June.

NOTES:

Readily recognised as a member of the "indica group" by the white to pale pink flowers (yellow only in the throat) and the clustered inflorescence arising from the apparent petiole. *Nymphoides triangularis* and the following species *N. elliptica* both differ from all other species of that group in having the blade of the inflorescence-subtending leaf distanced from its inflorescence cluster by a long conspicuous petiole and in having the "papillae" clusters of the corolla tube comprised of long fine branched hairs.

The non-spongy leaves, moderately large 5-partite flowers and the lack of a central keel on the corolla lobe are other notable characters shared by *N. triangularis* and *N.*

elliptica although not confined to them. The two species may be similar at first sight but *N. triangularis* differs in its smaller, more numerous, differently sculptured seeds, its deeply lacinate rather than \pm entire corolla lobes, its longer slender style and \pm elliptic rather than deltoid stigmas of the long-styled flowers and in the \pm triangular rather than elliptic outline of the most typical leaf blades. The comparatively long and narrow corolla tube of *N. triangularis* may prove to be another distinctive feature.

Both *N. triangularis* and *N. elliptica* have long-styled flowers and also flowers which appear mid-styled, the anthers of the latter being held from very slightly above to very slightly below the level of the stigmas; no definitely short-styled flowers have been found but this may be due to insufficient collections or observations.

The epithet *triangularis* refers to the most characteristic outline of the leaf blades.

***Nymphoides elliptica* H. I. Aston, sp. nov.**

Nymphoides sp. nov. "C", Aston in litt.

Plantae annuae. Laminae foliorum (15-) 30-85 x (10-) 20-60 mm, anguste usque late ellipticae vel ovato-ellipticae, singulae sinu basali profundo acuto. Inflorescentia fasciculum densum pedicellorum formans, a folio singulari subtenta; petiolus folii subtendentis plerumque laminam aequans vel longior. Flores heterostyli, (4)5-partiti. Corolla 14-25 mm diametro, alba vel pallide rosea vel pallide malvino-rosea, fauce flava; lobi duabus alis latis lateralibus praediti (alae integrae nisi crenulae vel dentes ad apicem vel apicem versus), et proxime super basin fimbriis conspicuis transversis papillarum tenuium ornat; tubus fasciculo pilorum subtilium plurimorum instructus (pili 0.8-1.3 mm longi, secundum lineam mediam quisque inter bases filamentorum). Stylus florum longistylum c. 1.5-2.5 mm longus. Stigma florum longistylum latum, deltoideum usque rhomboideum. Capsula ellipsoidea usque late ellipsoidea. Semina 5-15 per capsulam, paene globosa sed parce usque moderatim lateraliter compressa, 1-1.3 (-1.5) x 1-1.3 x 0.85-1.1 mm, maturitate atrofusca, omnino foveolata, rugis reticulatis inter foveolas (foveolae atque rugae tuberculis brevibus tenuibus obtusis omnino dense velatae); caruncula basalis, rotunda, pallida, crassa, conspicua.

Ob petiolum longum folii peculiaris (quod inflorescentiam subtendit) et ob pilos longos subtiles ramificatos *N. triangularis* similis, sed ab illi specie differt: seminum numero sculpturaque, loborum corollae figura, styli longitudine et stigmatis forma in floribus longistylis, atque laminae typicae foliorum forma.

Apparently annual. *Petiole-like stems* few to many, arising from the plant base, slender, flexuose, 8 cm (plants on mud) to 79 cm (plants in water) long x 1.5 mm or less diam.; true petiole conspicuous, (1-) 2.5-14 cm long, usually as long as or longer than the blade, equal in width to the stem and like it often maroon-purple. *Leaf blade* obtuse, entire, narrow- to broad-elliptic or ovate-elliptic in outline, with a pronounced, acute, basal sinus; sinus 30-45 (-50)% of total blade length, of (2°-) 20°-40° (-50°) angle and sometimes with the proximal portions of the obtuse basal lobes overlapping by up to 10°; blade (15-) 30-85 x (10-) 20-60 mm, widest at or slightly above (rarely below) the petiole insertion, green above, sometimes purplish beneath, not spongy. *Juvenile leaves* basal, submerged, very thin-textured; blades ovate to deltoid, 10-22 mm long; petioles flattened, 10-26 mm long. *Inflorescence* as for the "indica group", the pedicels subtended by acute bracts 1-6 mm long. *Pedicels* (7-) 10-22, noticeably distanced from the subtending leaf blade by the conspicuous petiole, very slender, (15-) 35-85 x < 0.5-1 mm, usually pale to deep maroon-purple. *Flowers* (4)5-partite. *Calyx lobes* linear-lanceolate to lanceolate, acute to obtuse, greenish or purplish with narrow translucent margins, sometimes outcurved at the apex in fruit, (3.5-) 4-6.5 mm long. *Corolla* 14-25 mm span, c. 2.5 times as long as the calyx, white or white tinged with very pale pink or mauve-pink, the tinge deeper on the external surface of the mid-section of the lobes; tube yellow. *Corolla-lobe* broad-elliptic-oblong to obovate; mid-section glabrous except for a transverse fringe consisting of a single row of fine papillae c. 1-1.5 (-2) mm long just above its base; side-wings broad, undulate, entire except for small crenations or teeth at the apex or along the distal third or half. *Corolla tube* usually a little < calyx; tube "papillae" consisting of a conspicuous cluster of fine, sessile, several-branched hairs 0.8-1.3 mm long. *Stamens* with filaments c. 0.2-0.3 and 0.7-0.9 mm long in long-styled and mid-styled flowers respectively; anthers broad-linear, 2.5-4 times as long as broad, 0.9-1.7 mm long. *Gynoecium (long-styled flower)* c. 6-8 mm long; ovary \pm ellipsoid-conical, gradually tapered into the style; placentas 2, from minute to one-third or

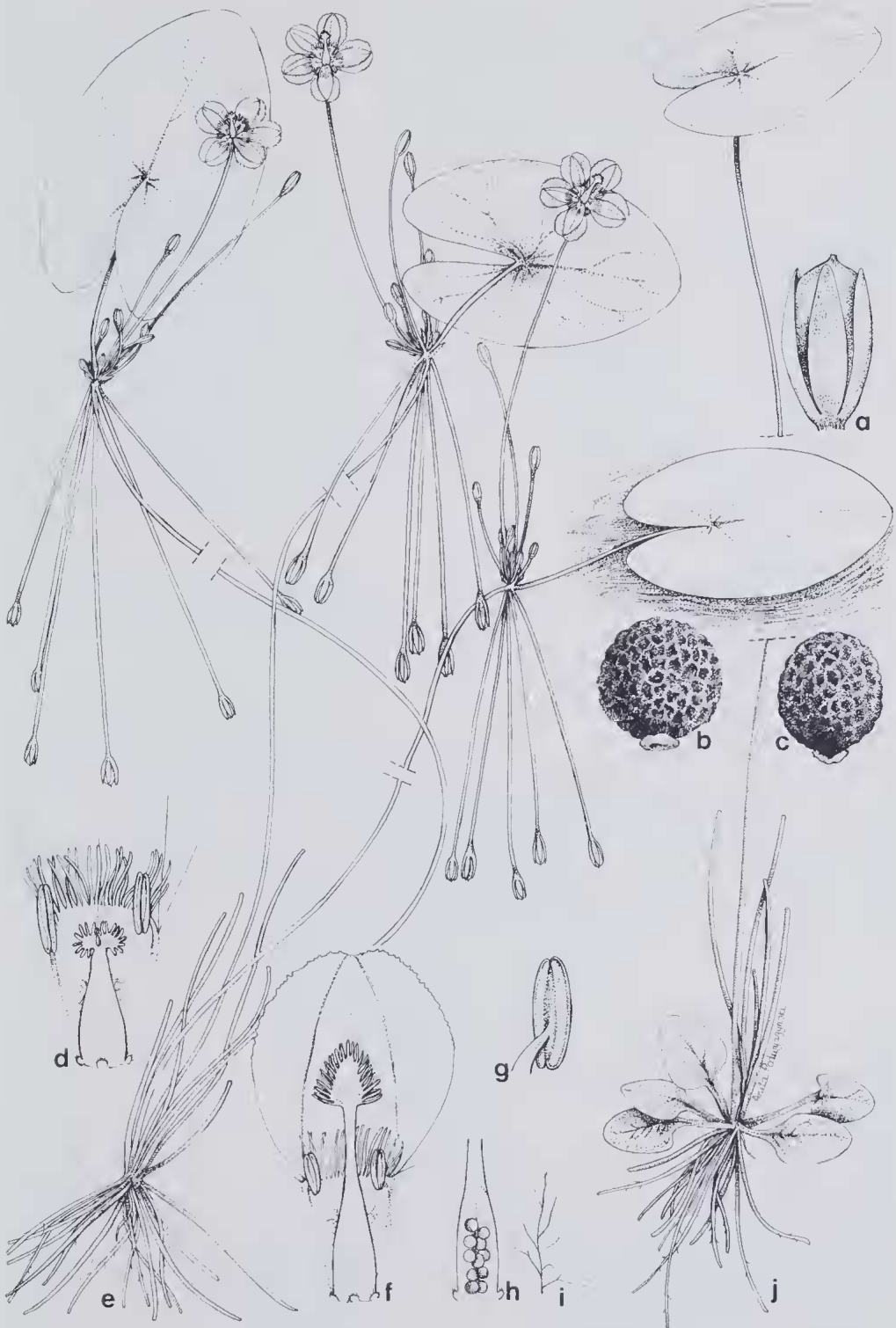


Fig 2. *Nymphoides elliptica*. a — capsule and persistent calyx, x 4. b — seed, face view, x 13. c — seed, edge view, x 13. d — portion of mid-styled flower, x 5. e — habit, x 0.7. f — portion of long-styled flower, x 5. g — anther, dorsal view showing connective and versatile attachment, x 13. h — ovary, L.S. showing the position of one of the placentas, x 5. i — hair from the corolla tube clusters, x 16. j — young plant, showing submerged juvenile leaves at base, x 0.7. All from Aston 2260(MEL).

one-half of the locule length and centrally positioned down the ovary wall; ovules c. 5-17; style c. 1.5-2.5 mm long; stigmas 2, each an erect, broad-deltoid to broad-rhomboid, papillate, strongly lacinate wing c. 2-3 mm long and broad. *Gynoecium* (mid-styled flower) c. 3-5 mm long; style c. 0.3-0.8 (-1) mm long; stigmas 0.8-1.6 mm long, usually somewhat broader than long, each dissected almost to the base into many laciniae. *Capsule* ellipsoid to broad-ellipsoid, from a little < to a little > the calyx, (4-) 4.5-6 (-6.5) mm long. *Seeds* 5-15 per capsule; body of seed near-globose but slightly to moderately laterally compressed, 1-1.3 (-1.5) mm long x 1-1.3 mm wide x 0.85-1.1 mm thick, dark grey-brown-black when mature, pitted all over, the pits and the reticulate ridging between them all densely covered with short fine obtuse tubercles; basal caruncle circular, pale, thick and conspicuous.

TYPE COLLECTION:

10.3 km east of "Musgrave" along the "Marina Plains" road, 14° 45' S., 143° 35' E., Cape York Peninsula, Queensland, 13.v.1982, *Aston 2260* (Holotype: MEL 612197. Isotypes: BRI, CANB, K, MEL 612198 and 199).

SELECTED SPECIMENS EXAMINED (total 5):

Queensland (Cape York Peninsula) — 2.2 km E. of "Musgrave", 14° 47' S., 143° 31' E., 13.v.1982, *Aston 2253* (BRI, CANB, K, MEL 612190-193, NSW, PERTH). 9.6 km S. of the Sefton-Oroners road on the track to Koolatah, 15° 33' S., 142° 42' E., 29.vi.1981, *Clarkson 3781* (BRI, K, MO, NT, PERTH, QRS (all not seen); MEL 590450!). Edward River Settlement area, c. 14° 53' S., 141° 37' E., vii.1981, *Bredl s.n.* (MEL 641986; MEL spirit collection 484/B).

DISTRIBUTION:

Queensland — Known only from the Edward River, Alice River, "Musgrave" and North Kennedy River areas of Cape York Peninsula. Almost certainly occurs elsewhere on the peninsula in similar habitat.

HABITAT:

Clear, still to gently flowing fresh water 5-60 cm deep on sandy substrate in seasonally flooded swamps and edging small ephemeral streams through *Melaleuca* woodland. Temporarily persists as small depauperate plants on drying mud left by receding waters. Fl. and Fr. recorded 15 April-29 June.

NOTES:

Readily recognised as a member of the "indica group" by the white to pale pink flowers (yellow only in the throat) and the clustered inflorescence arising from the apparent petiole. For differences from other species see under *N. triangularis*, notes.

The epithet *elliptica* refers to the most characteristic outline of the leaf blades.

ACKNOWLEDGEMENTS

Mr J. R. Clarkson, botanist at the Mareeba branch of the Queensland Herbarium, provided facilities and regional information for my field work on Cape York Peninsula in 1982 and has willingly watched for and collected *Nymphoides* during his own extensive field work on the Cape. Mr and Mrs R. Bredl (Edward River) and Mr S. T. Garnett (James Cook University, Townsville) responded to my request for additional collections from Edward River and Dr B. R. Jackes (JCT) liaised on my behalf concerning plants of that region. The Chairman and members of the Edward River Settlement granted permission for me to visit and collect at the Settlement but unfortunately late rains prevented the visit. Dr. J. H. Willis, Brighton, Victoria, prepared Latin descriptions from the English draft and Miss A. Podwyszynski of the National Herbarium of Victoria provided the illustrations. I am most grateful to all of these people for their assistance. In addition, I wish to thank Mrs T. Kloot of Melbourne and Mr S. Trezise of Laura for their help and pleasant companionship in the field during my searches in 1982.